DRAINAGE ELEMENT

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DRAINAGE

Seminole County Comprehensive Plan Element

DRAINAGE ELEMENT
INTRODUCTION

Section 163.3177(6)(c), Florida Statutes, requires that each Comprehensive Plan contain a general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge element. As part of meeting this requirement, County has prepared and adopted a standalone Drainage Element

The Drainage Element assesses current and anticipated needs associated with stormwater management, defines the County philosophy and policy direction with regards to addressing these issues and outlines a long-range implementation plan to solve the identified problems. The focus of the County's Stormwater Program concerns both the quantity aspects of drainage relating to capacity and flood control and, also, the quality of runoff into receiving waters.

The County's major stormwater conveyance system was initially comprised largely of a system of private, inadequately maintained agricultural ditches and canals connected to natural streams, which feed into the major lakes and rivers. This conveyance system, while once adequate to serve a predominantly agricultural community, has been increasingly strained by the needs of a growing, urbanized County. Standards have been established for correction of deficiencies and are intended to ensure that improvements are made to key structures within all basins in a comprehensive fashion. Eleven master basin evaluations, of the sixteen identified basins, have been completed. Three more are in progress. A number of additional deficiencies that have been identified by the studies so far.

County stormwater standards contained within the Land Development Code address peak rate discharge only. As a result of the drainage basin evaluations, a "rolling" five-year program strategy has been established to systematically identify and improve existing deficiencies. The Stormwater Capital Improvements Program annually updates the five-year list of planned deficiency corrections which is then adopted into the Capital Improvements Element of the Comprehensive Plan. The ability to fund ongoing stormwater needs is key to accomplishing the identified program within a reasonable time period. To this end, the County has annually allotted monetary resources towards the program and continues to consider additional sources of income that could expand the program's efforts.

An additional issue of increasing concern is the water quality impacts of storm runoff to receiving water bodies. Currently, Seminole County is monitoring over seventy-five locations in many natural water bodies. The current status of the lakes and rivers with regards to water quality has been assessed and several programs are being implemented improving water quality. Further, regulations promulgated by the US Environmental Protection Agency known as the National Pollutant Discharge Elimination System have had significant impacts on the County's level of monitoring outfalls to waters of the State. Additionally, the Florida Department of Environmental Protection is working with Seminole County for the implementation of Total Maximum Daily Loads on many of the County's receiving water bodies.

Lastly, one of the most significant new projects completed by the County's Roads-Stormwater Division has been the development of a Countywide Watershed Atlas, a website that serves as the public clearinghouse for stormwater, water resources, and other natural resources data regarding Seminole County. This tool contains hydrologic data (water level and flow data), bathymetric (contour) data, vegetation data, wildlife data, and water quality data on all of the water bodies in Seminole County, providing staff, citizens, and professionals with up to date information online.

Primary sources of information used to produce this element are from or include the following:

A Seminole County Public Works

B Seminole County Development Review Division

C Seminole County Roads-Stormwater Division

D Seminole County Drainage Inventory and Engineering Evaluations

DRAINAGE ELEMENT
ISSUES AND CONCERNS

Issue DRG 1 Basin Evaluation / Improvements

To meet the requirements of the Florida Growth Management Act, Chapter 163 Florida Statutes, and to ensure the public safety and protection of property, continued analysis of the County's existing stormwater system and a continued, systematic program to correct existing deficiencies and meet future demands is necessary, and has been ongoing since the late 1980's.

In order to assess the magnitude of existing drainage deficiencies, Seminole County undertook a planning study of stormwater needs, entitled the "Stormwater Management Study". This study was based on available information and an assessment of the County's major conveyance system. The primary finding of this study indicated that a significant portion of the existing drainage infrastructure is in need of improvement. *Policy DRG 1.6 Strategy for Deficiency Correction/Study Implementation* identifies the chronological process for completing identification of deficiencies and correction, beginning with the drainage basin evaluations, or basin inventory and engineering studies. The completion of eleven of sixteen needed drainage basin evaluations has more accurately defined deficiencies and dollars needed to evaluate potential upstream and downstream impacts of proposed solutions. The primary goal of the Stormwater Management Study was the prioritization of master basin evaluations necessary to accurately determine existing deficiencies and future needs.

The eleven master basin evaluations that have been completed for Seminole County include. (All the basins identified for study are depicted on *Exhibit DRG: Seminole County Drainage Basins):*

A Gee Creek

B Little Lake Howell

C Howell Creek

D Lake Jesup

E Little Econ River

F Little Wekiva River

G Midway

H Lake Monroe

I Soldier's Creek

J Sanford (completed by the City of Sanford)

K Big Wekiva

The original evaluations have identified the ten and twenty-five year storm frequencies and used twenty-four hour rainfall events under existing hydrologic conditions to determine deficiencies. Since 1996, all basin evaluations have included analysis of the mean annual (2.3 year), ten year,

twenty-five year, fifty year, and one-hundred year storm events. There are five remaining basin evaluations to be completed. Funds are committed annually within the Capital Improvements Element to continue basin evaluations and improvements.

Issue DRG 2 Funding

Funding continues to be one of the most important issues of the County's current Stormwater Management Program. The cost of correcting unfunded deficiencies has grown steadily in recent years. The dollar increase is due both to the identification of needs from the master basin evaluations and the few projects that have been funded since that time.

An effective Stormwater Program will ensure public safety, minimize flooding, ensure sufficient treatment of runoff and meet or exceed regulatory requirements, which is especially true given the implementation of Florida Department Environmental Protection's Total Maximum Daily Load (TMDL) program. This will require the continued implementation of the specific master basin plans, correction of existing deficiencies, regulatory mandates, and ongoing system maintenance. The acquisition of right-of-way is an essential component to the long-range maintenance of stormwater facilities. The magnitude of costs associated with meeting these needs is beyond the means of the County's currently applied revenue sources.

A final component, which is critical to effective stormwater management in the new millennium, is maintaining an effective water quality program. Higher standards are required today for maintaining the water quality of receiving water bodies from the State and federal government than in 1991. Currently, the County has a limited water quality monitoring program that is maintained through the National Pollutant Discharge Elimination System requirements, but the County is working with the Florida Department of Environmental Protection towards expanding future monitoring efforts as part of the TMDL program.

Upon completion of the five remaining basin evaluations, the number and cost of identified deficiencies will likely increase. Historical funding sources allocated for stormwater evaluations and deficiency correction have not addressed comprehensive stormwater program needs.

Seminole County shall continue to pursue development of funding strategies, which generates the required funds while being equitable to County residents. As recommended within the Stormwater Management Study, Seminole County has in the past and is continuing to evaluate funding mechanisms to alleviate these deficiencies. Financing alternatives recommended by the Stormwater Study include bonding, special improvement assessment districts, and a stormwater utility fee. These alternatives and others may be considered by Seminole County for funding of specific drainage improvement needs to supplement a stormwater utility or similar programs.

A dedicated stormwater funding source could enable to take advantage of future grant opportunities. State grants now require a 50% or greater local match.

Issue DRG 3 Operation and Maintenance

Historically, Seminole County's maintenance of stormwater facilities has focused primarily on improvements associated with the development, expansion and maintenance of County roadways. With the correction of deficiencies and establishment of standards based upon a facilities performance, and given the current growth rate and the continuing natural deterioration of existing drainage systems, ongoing maintenance and structural improvements are issues of increasing importance. Seminole County should consider increasing current stormwater facility maintenance practices and enhance its maintenance program.

Privately owned systems are a major issue that will continue into the future. A number of primary stormwater conveyance systems are under private ownership, thus prohibiting county maintenance. The County initiated a program to acquire and/or secure legal access to drainage rights of way since improvements and maintenance of these ditches and canals is becoming a critical component to the overall stormwater program. Methods to fund this program are to be considered.

Another issue that the County plans to address in the future is the use of underdrain facilities. Underdrains are perforated pipe systems placed under or around ponds and roadways to aid in drawdown and recovery of stormwater. They are typically used in areas where natural storage retention systems do not provide sufficient percolation or used where there is insufficient land for retention ponds. Historically, these systems have required an extensive and expensive amount of maintenance to keep them free of debris and organic accumulation. The use and resulting high maintenance requirements of underdrain facilities as an alternative stormwater management device is becoming an increasing issue of concern for Seminole County and other local governments. Regulations requiring local government certification and maintenance of such systems have created a costly burden to local governments and the local community. Inadequate facility maintenance poses serious water quality impacts to local communities. Since the St. Johns River Water Management District has revised its rules regarding underdrains, they are being used less often. Seminole County currently has plans to review the regulations and minimize the use of underdrains.

Issue DRG 4 Intergovernmental Coordination

Due to the interconnection of surface water flow and the operation of drainage systems, it is cost-effective and more efficient to study, fund and implement master plans by basin areas rather than jurisdictional boundaries. Historically Seminole County has paid for the master basin planning of all basins except the Sanford Basin. This initiative provides a platform for coordination with numerous local governments and other agencies to collaborate with implementation of the plans. To continue and expand upon this coordination, Seminole County adopted a resolution in 1989 establishing an Intergovernmental Task Force for Stormwater Management. The Task Force membership, now called the Middle Basin Working Group, is comprised of officials representing Orange County, the District, and all municipalities and other concerned agencies within Seminole and Orange Counties. The purpose of this Working Group is to

partner with the District to increase education, funding for projects, and improve water quality of the middle St. Johns River Basin.

During the Spring of 2000, Seminole County went online with a revolutionary new web-based information system known as the Seminole County Watershed Atlas. This tool contains the County's best available information on water quality, hydrology, bathymetry, vegetation, and in some cases, wildlife in an easy to use search format for all of Seminole County's natural waterbodies. Additionally, this tool contains a powerful search engine for bibliographic information on waterbodies, including studies, reports, and other information types. It also provides real-time water quality information on select water bodies of Seminole County, National Pollutant Discharge Elimination System information, meteorological data, and Total Maximum Daily Load results for designated impaired water bodies. It is vital to the future of the educational endeavors of Seminole County Roads-Stormwater Division that continued commitment to this tool occurs and that it is available for others to use.

Issue DRG 5 Private Facilities/Retrofitting

Seminole County is responsible for the development and operation of publicly owned stormwater facilities. There are a significant number of private systems that are inadequate and/or not maintained posing the potential for local flooding and water quality degradation. Two general categories of private stormwater facilities need attention: (1) improperly maintained and deteriorating structures and (2) older systems, which are inadequate and not consistent with current design regulations.

The improvement and ongoing maintenance of existing stormwater facilities is an issue of increasing importance given the age and continuing deterioration of these structures. Maintenance of systems associated with private developments is typically the responsibility of homeowner associations. Where improvements and facility replacement are necessary, Seminole County makes private property owners aware of alternative options for facility correction to include the establishment of Municipal Services Taxing Units which permit the County to correct deficiencies and maintain facilities.

Today, there are many older developments that cannot adequately handle the volume of stormwater runoff generated on-site, and are without provisions for treatment to ensure water quality. Seminole County now regulates the expansion and/or redevelopment of all sites to require that stormwater facilities meet or exceed existing regulations to the maximum extent practical.

Issue DRG 6 Water Quality – Assessment and Improvement

Statewide, there is increasing concern over the contribution of stormwater runoff to the water quality of receiving water bodies. For Seminole County, a designated Primary Water Caution Area (by the St. Johns River Water Management District) (District), groundwater is of increasing concern and regulation. Additionally, water quality standards for development must be addressed to meet the requirements of the Florida Growth Management Act, Chapter 163, Florida Statues. Currently, regulations and standards associated with the construction, design and operation of stormwater

management facilities address water quality treatment. Programs for improving existing degraded receiving bodies are of concern. Potential impacts can be divided into two general categories: point and non-point sources of contribution.

The Water Quality Program and the Lake Management Program have been implemented by the County to assess and monitor, on an ongoing basis, water quality in the County's primary drainage ways and receiving bodies to determine critical areas or specific pollution conditions associated with stormwater runoff and to identify a long-range program to correct problems. The Water Quality Section currently monitors (or collects surface water samples) on a quarterly basis (four times a year) at approximately seventy-five locations. The Roads-Stormwater Division's Water Quality Section's primary objectives are monitoring, assessing, protecting, and enhancing the quality of surface waters in unincorporated Seminole County. These objectives are achieved through a coordinated sampling program, public education and outreach, County (internal) education and training, volunteer revegetation and clean up projects, water quality improvement projects, and by providing technical assistance to residents and other agencies. The cooperative education and outreach programs include District Watershed Action Volunteers, University of Florida Lake Watch, and Florida Yards and Neighborhoods.

The United States Environmental Protection Agency required that Seminole County, as well as the seven cities within the County, apply for a National Pollutant Discharge Elimination System Stormwater Permit (NPDES). The overall goal of this permit, as part of the Federal Clean Water Act, is to reduce the amount of pollutants in stormwater runoff that is discharged directly into natural waterbodies, streams and rivers. This goal is achieved through the previously mentioned tasks (monitoring, education, improvement projects, etc.). This goal is also achieved through State regulations that were implemented in the 1980's, which require developments to construct stormwater systems that provide water quality treatment for stormwater runoff (such as retention ponds and other similarly functioning structures).

The County was issued an NPDES permit numbered FLS 000038 in 1998. The NPDES permit requires tracking many activities throughout the year and summarizing them in an Annual Report that is submitted to Florida Department of Environmental Protection (FDEP).

This includes the tracking and collection of information and activities from numerous divisions and departments across the County, as well as the collection and analysis of water quality data from various locations throughout the County.

These locations include lakes, rivers, creeks and streams. The water quality data collected can be seen and is explained on the Seminole Watershed Atlas, which can be found at www.seminole.wateratlas.org. In addition to the water chemistry sampling program, the Water Quality staff conducts biological monitoring/habitat assessments bi-annually at thirty-five lake, stream and river locations. This type of biological monitoring includes Stream Conditions Index, Rapid Bioassessment , and Lakes Condition Index. This monitoring includes assessing impacts on in-stream/lake

habitats, as well as the surrounding areas, types of habitats found, and identification of macroinvertebrates (insects and insect larvae) in the water body. This type of assessment will give an overall picture of the health of the water body. This information, once collected and assessed, is also be available on the Seminole Watershed Atlas.

Impaired Surface Waters Rule Development

The "Identification of Impaired Surface Waters" Rule (62-303 Florida Administrative Code) (FAC) was made available by Florida Department of Environmental Protection (FDEP) on September 5, 2000. This rule defines impairment for lakes, streams, and rivers based on nutrient enrichment, and State water quality standards based on designated uses.

The Federal Clean Water Act requires that states must submit lists of surface waters that do not meet applicable water quality standards (impaired waters) and develop Total Maximum Daily Loads (TMDL) for these waters. Essentially, each impaired water body/segment will be allowed to receive a certain annual amount/quantity of pollutant from every source, this includes point sources (industries, wastewater treatment plants, etc.), stormwater runoff, agricultural runoff, and air deposition. The TMDL development for each pollutant of concern for each water body will be determined by Rule 62-303, FAC.

The development and implementation of the TMDLs by FDEP is currently being conducted on a five-phase cycle that rotates through Florida's major basins every five years, and includes initial basin assessment, coordinated monitoring, data analysis and TMDL development, basin management plan development, and implementation. Seminole County has waters in basin Group 2 and Group 3.

Currently there are 24 impaired waterbodies identified by the FDEP TMDL program. Individual Basin Management Action Plans (BMAP) are currently being developed for several of these waterbodies, with the remainder to be initiated within the near future. These BMAPs describe what activities and capital improvements (CIP) projects will be implemented in order to restore the health of each water body. Each local government, agency, and/or private entity that contributes pollutant loads to an impaired water body are required by State and Federal regulations to identify specific activities and or CIPs that will be funded and implemented to offset or reduce their individual pollutant loads. Funding sources for these TMDL implementation projects need to be identified.

The following is the currently listed water bodies/water body segments that are on the FDEP TMDL list verified for Seminole County:

1 Lake Adelaide
2 Lake Alma
3 Chub Creek
4 Cranes Strand Ditch
5 Bear Gully Lake
6 DeForest Lake
7 Econlockhatchee River
13 Lake Jesup
14 Lake Jesup at the St. Johns River
15 Lake Monroe
16 Little Econlockhatchee River
17 Little Wekiva River
18 Lockhart Smith Canal
19 Lake Orienta

8	Lake Florida	20	Salt Creek
9	Lake Fruitwood	21	Sweetwater Creek
10	Lake Howell	22	Lake Searcy
11	Howell Creek	23	St. Johns River
12	Lake Harney	24	Wekiva Springs/River

Issue DRG 7 Level of Service

A level of service is defined by Rule 9J-5, Florida Administrative Code, as an indicator of the extent or degree of service provided by, or proposed to be provided by a facility based on and related to the operational characteristics of the facility. The adoption of a level of service for stormwater facilities must ensure that acceptable flood control and water quality is maintained or improved with the issuance of development permits or capital improvements scheduling.

Generally, levels of service are set based upon the average daily demand for service of a person, employee, housing unit, vehicle or square footage by type of use. However, this concept cannot readily be applied to stormwater conveyance systems. Rather, a "level of protection" is defined based upon the frequency and duration of a rainfall event and the performance of the facility regarding flood control and water quality treatment. For the drainage element, level of service is actually a level of protection. Levels of service have been established for development. The adopted level of service is consistent with the rules of the Florida Department of Environmental Protection and the St. Johns River Water Management District. The County has also adopted as a level of service the same standard criteria for correction of deficiencies.

Seminole County is implementing a deficiency correction program for drainage structures. *Policy DRG 5.4 Water Quality Monitoring and Deficiency Correction Program* outlines guidelines for the systematic correction of deficiencies and ongoing facility maintenance. The deficiency correction program focuses on meeting the standards for development in Seminole County (*Exhibit DRG: Level of Service Standards for Development*). Additionally, the basin evaluations used to identify deficiencies have developed guidelines used to assign critical duration design storms based on the type of facility being used. Basin evaluations and improvements are made in a priority order as adopted within the Capital Improvements Element until completed and improved to accommodate, at a minimum, a 25 year design storm.

Issue DRG 8 Recharge Protection and Groundwater Supply

The most effective aquifer recharge areas are often located within areas most suitable to development. Development performance standards and other mechanisms have been implemented to ensure the preservation of the most effective recharge areas.

The Floridan Aquifer is the primary source of potable water for Seminole County. Replenishment of the Aquifer occurs primarily from rainfall on recharge areas. The most effective recharge areas are generally high, dry uplands with highly permeable soils. Within Seminole County, most

effective recharge areas are located within the southwest part of the County, the I-4 corridor and the Geneva area. These areas are clearly shown in *Exhibit FLU Series: Recharge Areas*. In order to ensure that functions of most effective recharge areas are maintained, including, but not limited to, the protection of water quality, measures have been implemented to maximize preservation of these areas.

Current measures include the increase of open space areas and protection of native vegetation. This is particularly important within the southwest and west portions of the County, which are highly urbanized, thus leading to a greater amount of impervious surfaces. Other means to be evaluated to supplement County regulations include use of natural retention areas, minimizing lowering of the water table, septic systems and treated effluent used for spray irrigation.

Both the quantity and quality of available potable water supplies is an increasing concern as Seminole County continues at a high rate of growth. Seminole County has conducted a Ground Water Supply Study to assess the availability and quality of potable water supplies. The study includes a Countywide (including portions of Orange County) model of the Floridan Aquifer and evaluated existing and future water demands, critical water supply areas, salt-water intrusion, and future wellfield locations. This report estimated that the County is currently overdrafting more potable water than is being recharged. The study reports that the County will not be able to meet projected water demands without substantial conservation programs, reuse of reclaimed water and surface water augmentation. The Region III Water Efficiency Group, affiliated with the Florida Section of the American Water Works Association, is a task force of County, municipal and private water supply agencies, was created to assess study results and develop recommended water conservation programs, and recommend further study needs. A wellfield protection ordinance has been adopted to regulate and develop performance standards for uses within protection zones, which may impact groundwater quality.

Since that time, the District has completed a lengthy study process of the water supply issues of the entire St. Johns River Basin, of which Seminole County is a part. Seminole County has been designated as priority water caution area as a result of this study process, known as Water 2020. This study indicated that the Floridan Aquifer, our primary source of groundwater, is scheduled to significantly decrease in volume during the next planning horizon (20 years) and it identified alternatives for water supply to offset these decreases, most notably, surface water. There are multiple issues related to establishment of a surface water supply system, including siting of facilities, costs, and minimum flows and levels, to name a few.

In 2007, Seminole County adopted a Water Supply Facilities Work Plan and is partnering with the District to construct a surface water treatment plant. Seminole County will maintain an active role in the regional water supply planning process.

Issue DRG 9 Evaluation and Appraisal Report 2006 – Review of Findings

The following items were listed as "shortcomings" in the 2006 Evaluation and Appraisal Report. A brief description of how each is being addressed is provided.

A *Objective DRG 1 Deficiency Correction* – The County needs to amend the Comprehensive Plan as necessary to incorporate the long-range deficiency correction and monitoring programs, such as those required by the United States Environmental Protection Agency and Florida Department of Environmental Protection into the Capital Improvements Element

- *The County annually updates the five-year Capital Improvements Element lists of facility projects. The Drainage Element section identifies capital projects dealing with deficiency correction, maintenance of stormwater structures, restoration projects, and on-going monitoring programs.*

B *Objective DRG 2 Facility Regulation, Construction, Design and Maintenance* – A dedicated funding source has not been identified to correct existing facility deficiencies.

- *The County currently has two Municipal Service Taxing Units in effect – one for unincorporated roads and one for Fire/Rescue. These were enacted by a vote of the Board as necessary to the health, safety and welfare of the citizens of Seminole County. While an MSTU for Drainage would be the most direct route towards securing a dedicated funding source, the current reductions in ad valorem tax revenues and general direction from the State to not make up these losses with additional tax or millage increases makes the use of such a measure inadvisable at this time. This does not mean that work on identified critical stormwater issues is not being undertaken. It does mean that work will likely proceed at a slower pace and over a longer period of time.*

C *Objective DRG 3 Natural Resource Impacts* – Future TMDL regulations will likely require no net increase in pollutants discharging from a developed or redeveloped site.

- *Once such regulation is put into effect, the Comprehensive Plan and Land Development Code will be updated to incorporate effective measures to meet the standard.*

D *Objective DRG 4– Funding* – Lack of a dedicated stormwater funding source will significantly limit future grant opportunities, since State funds now require a minimum 50% match of funds.

- *As noted in B 1 above, at this time new funding initiatives are unlikely to be put into place.*

E *Objective DRG 5– Levels of Service* – No shortcoming identified.

F *Objective DRG 6 Intergovernmental Coordination* – No shortcoming identified.

Issue DRG 10 Total Maximum Daily Load

Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

The Federal Clean Water Act requires that states submit a list of impaired surface waters that do not meet applicable water quality standards and establish TMDLs for these waters. Essentially, each impaired water body/segment will be allowed to receive a certain annual amount/quantity of pollutant from every source such as point sources (industries, wastewater treatment plants, etc.), stormwater runoff, agricultural runoff, and air deposition. The TMDL development for each pollutant of concern for each water body will be determined by the Impaired Waters Rule through the TMDL development cycle.

Water bodies that are determined to be unhealthy or “impaired”, based on the State’s water quality standards, require the development and implementation of specific management plans which will return the water bodies to their previously unimpaired or healthy state. There are currently 24 water bodies in Seminole County identified as impaired water bodies. The completed plan will be reviewed and approved by the Secretary of FDEP and the findings incorporated into each participant’s National Pollutant Discharge Elimination (NPDE) permit requirements.

County staff will continue to work cooperatively with staff from the Florida Department of Environmental (FDEP) toward developing a proactive approach to the TMDL process through the County's monitoring program, NPDES program, education/outreach programs, and County Watershed Atlas project. These projects, along with coordination between County and FDEP staff, with the assistance of the County’s consultant, has and will continue to enable the County to participate and have greater affect upon the development of TMDLs for all impaired water bodies, including those within County municipalities.

In 2007, the County and County Municipalities approved an interlocal agreement to significantly streamline intergovernmental cooperation and funding opportunities to address this issue without creating a new entity or superseding the authority of individual jurisdictions.

Issue DRG 11 Low Impact Development

Low Impact Development (LID) is an innovative approach to stormwater management that incorporates various land planning and design practices and technologies to reduce impact to water quality from urban development. Implementation of LID approaches is a requirement of the County’s National Pollutant Discharge Elimination System permit.

In general, the LID approach includes practices that:

A Encourage preservation of natural resources;

B Allow development in a manner that helps mitigate potential environmental impacts.

C Reduce cost of stormwater management systems;

D Use a host of integrated management practices to reduce runoff; and

E Reduce pollutants into the environment.

Issue DRG 12 Development of Countywide Water Quality Protection and Monitoring

The County's Water Quality Section of the Roads-Stormwater Division has primary objectives of monitoring, protecting, and restoring the quality of surface waters in unincorporated Seminole County. These objectives are achieved through a coordinated sampling program, public education and outreach, County (internal) education and training, volunteer re-vegetation and clean up projects, water quality improvement projects, and by providing technical assistance to residents and other agencies.

The US Environmental Protection Agency (EPA) required that Seminole County, as well as the seven Cities within the County, apply for and receive a National Pollutant Discharge Elimination System Stormwater Permit (NPDES). (Most other large counties and municipalities throughout the Country were required to obtain this permit as well.) The overall goal of this permit, as part of the Federal Clean Water Act, is to reduce the amount of pollutants in stormwater runoff that are discharged directly into natural waterbodies, streams and river systems. This goal is achieved through the previously mentioned tasks (monitoring, education, improvement projects, etc.). This goal is also achieved through State regulations that were implemented in the 1980's, which require developments to construct stormwater systems that provide water quality treatment for stormwater runoff (such as retention ponds and other similarly functioning structures). The County is required by the NPDES permit to track many of these tasks throughout the year and to summarize them in an Annual Report, which is submitted to Florida Department of Environmental Protection (FDEP).

In addition, the County Water Quality Section is also tasked with assisting regulatory agencies in the development and implementation of the Total Maximum Daily Load Program, which is also Federally mandated by the Clean Water Act and administered by EPA and FDEP. This program requires the assessment of a water body's health and the determination as to whether it is meeting its designated uses, which in Seminole County equates to recreational uses (i.e. fishable and swimmable). Currently, there were 24 waterbodies within the County that were identified as not meeting the water quality standards for recreation. County staff is working with FDEP to identify the causes of the waterbodies impairments and identifying ways to restore their health, through education as well structural and non-structural projects.

As noted previously, the Water Quality Section currently monitors (or collects surface water samples) on a quarterly basis at approximately seventy-five locations. These locations include lakes, rivers, creeks and streams. The water quality data from these samples can be seen and explained on the Seminole Watershed Atlas (www.seminole.wateratlas.org). The Atlas is an online tool providing water resource data on Seminole County waterbodies from all agencies collecting the information. Starting in the fall of 2001, in addition to the water chemistry sampling program, the Water Quality staff initially began conducting biological monitoring/habitat assessments annually on five stream and river locations. This type of monitoring is called SCI (Stream Conditions Index) or BioRecon (rapid

biological assessments). This monitoring will include assessing impacts on in-stream habitats, as well as the surrounding habitats, types of habitats found, and identifying macroinvertebrates (insects and insect larvae) in the stream/river. This type of assessment will give an overall picture of the health of the stream/river. Subsequently, a Lake Conditions Index (LCI) was developed by the State to assess the biological diversity and health of lakes, similar to the SCI methodology. Another methodology for assessing lakes using the lake's vegetation (both quantity and quality) was developed by the State and is called a Lake Vegetation Index or LVI. Water Quality staff now conducts on an annual or biannual basis, approximately 35 bio-assessments (BioRecon, SCI, or LCI) and 15 LVI on County lakes, rivers, and streams. FDEP, who developed these types of assessments, have trained County staff on these assessment methodologies and continues to train and test County staff on a regular basis, as required by State regulations. All of this biological and habitat information, once collected, is available on the Seminole Watershed Atlas. Toward these endeavors, the County should provide by policy the means for continued commitment and coordination, as these monitoring activities are largely regulatory requirements under the NPDES permit.

DRAINAGE ELEMENT
GOALS, OBJECTIVES AND POLICIES

GOAL

The County will continue to implement a cost-effective stormwater program, which minimizes flooding and the adverse impacts of uncontrolled stormwater runoff to the public safety and to the quantity and quality of natural resources.

OBJECTIVE DRG 1 DEFICIENCY CORRECTION

The County will continue to implement a program to systematically identify and correct existing surface water quality and stormwater management deficiencies and meet future needs. Emphasis should be placed on maximizing use of existing facilities and discouraging urban sprawl.

Policy DRG 1.1 Basin Evaluations

The County shall continue its long-range program strategy, which builds upon existing stormwater studies to direct Stormwater Program needs that shall include, at a minimum, the following activities:

A The County shall continue to prepare individual drainage basin master plans, which survey and assess systems conditions, identify existing and future system deficiencies and identify necessary improvements to meet levels of service. These plans shall be periodically reviewed and updated; and

B The County shall prioritize remaining basin master studies based on the best available data, ongoing agency studies, identified deficiencies and anticipated growth.

Policy DRG 1.2 Deficiency Correction

The County shall seek to eliminate identified deficiencies through a systematic program to upgrade existing structures and/or construct area-wide systems as funding becomes available.

Policy DRG 1.3 Complaint Tracking

The County shall continue to operate the existing drainage complaint tracking system to facilitate the identification of nuisance problems, to assist in locating and prioritizing capital projects, and to establish a data base of historical drainage needs and corrective actions.

Policy DRG 1.4 Right-of-Way Acquisition

The County will continue to secure legal access and/or acquire rights-of-way associated with primary stormwater conveyances in order to correct deficiencies and maintain facilities.

Policy DRG 1.5 Deficiency Correction

The County shall maximize the use of existing facilities through increased capacity, operation and maintenance and consider area-wide stormwater facilities in correcting existing deficiencies and meeting growth needs.

Policy DRG 1.6 Strategy for Deficiency Correction/Study Implementation

The following chronology of events shall be used as a guide to facilitate the completion of basin evaluations, correction of deficiencies and maintenance of facility performance:

A BASIN EVALUATIONS: Basin evaluations shall be completed based on *Policy DRG 1.1 Basin Evaluations*. Basin evaluations shall include the components outlined in *Policy DRG 1.1 Basin Evaluations*. and long term improvements both for water quality and quantity and identification of the design storm to which long term improvements will be made and maintained for each basin.

B DEFICIENCY CORRECTION - QUANTITY: The Capital Improvements Element of the Comprehensive Plan shall be amended annually to adopt improvement projects necessary to meet and maintain the following level of service standards:

1 A 100-year/24-hour design storm standard will be assigned to bridges with spans greater than 20 feet and to any modeled stormwater structure intended to keep evacuation routes and emergency service buildings identified by the County operational.

2 A 50-year/24-hour design storm standard will be assigned to all cross drains and bridges with spans less than 20 feet intended to keep operational evacuation routes and emergency services buildings identified by the County operational.

3 A 25-year/24-hour design storm standard (as identified above) will be assigned to the primary drainage system and all retention/detention facilities included in the stormwater model that are not subject to the criteria listed above.

4 A 10-year/24-hour design storm standard will be assigned to all closed pipe conveyance systems included in the stormwater model that are not subject to the criteria listed above.

C DEFICIENCY CORRECTION - QUALITY: The Capital Improvements Element of the Comprehensive Plan shall be amended annually to adopt improvement projects necessary to address meeting established TMDL standards:

1 Maintain State water quality standards and any TMDL pollutant load reduction requirements assigned to water bodies identified as “impaired”.

2 Seek to identify water bodies at risk of pollutant impairment by means of the water quality monitoring program.

D FACILITY IMPROVEMENT DESIGN: All structural improvements to the Countywide conveyance system shall be consistent with the standards and criteria adopted in *Policies DRG 5.1 Development Level of Service Standards* and *DRG 5.2 Land Development Code Stormwater Criteria* and *Exhibit DRG: Level of Service Standards For Development* as implemented within the County’s Land Development Code.

E OPERATION AND MAINTENANCE STANDARDS: Maintain an ongoing operation and maintenance program as required. Annual program costs shall be incorporated into the annual Stormwater Field Operations operational budget.

Policy DRG 1.7 Inclusion within the Capital Improvements Element

The annual update to the CIE five-year capital projects listing for Drainage shall include deficiency corrections identified in the basin studies.

OBJECTIVE DRG 2 FACILITY REGULATION, CONSTRUCTION, DESIGN AND MAINTENANCE

Protect the public safety, welfare and property from flood hazards and degradation of water quality through effective regulation, design and maintenance of stormwater facilities and systems.

Policy DRG 2.1 Land Development Code

The County shall continue to amend the Land Development Code (including surface water management standards) to ensure consistency with Chapter 40C-4 Florida Administrative Code, of the St Johns River Water Management District governing stormwater management.

Policy DRG 2.2 Floodprone Area Delineation

The County shall continue to rely upon Flood Insurance Rate Maps as produced by the Federal Emergency Management Agency.

Policy DRG 2.3 Floodprone Area Regulation

The County shall address areas subject to flooding problems collaboratively with the development community, and in the development review process permit only minor modification, with compensating storage, of the 100-year flood elevation.

Policy DRG 2.4 Conservation Easements

The County shall continue to require the dedication of conservation easements as a means of protecting the functions of floodways and water quality.

Policy DRG 2.5 Facility Construction

The County shall prohibit alteration of existing structures and natural drainage systems that would potentially endanger public safety and/or have an adverse effect on property, water quality or other natural resources.

Policy DRG 2.6 Underdrain Regulations

The County shall update the Land Development Code to effectively address the known problems associated with many underdrain facilities and provide feasible alternatives.

Policy DRG 2.7 Facility Development Regulations

The County shall continue to rely upon the Land Development Code's Surface Water Management Standards and the Building Code to ensure that the design, construction and operation of stormwater facilities is consistent with adopted engineering standards and encourages the use of best available management practices.

Policy DRG 2.8 Wekiva Study Area Land Development Regulations

The County shall enforce, and as appropriate, strengthen existing Land Development Code regulations to implement the master stormwater management plan and land development regulations provisions of the Wekiva Parkway and Protection Act, Sections 369.319 and 369.321(6), FS. Land development regulations shall implement Plan policies regarding stormwater management systems within the Wekiva Study Area.

OBJECTIVE DRG 3 NATURAL RESOURCE IMPACTS

The County shall maintain or improve the quality and function of natural drainage systems, ground and surface waterways, recharge areas and associated natural resources through emphasis on non-structural approaches to floodplain management. Ground water and recharge areas are further protected by *Objective CON 1 Groundwater Protection* and its associated policies; and, *Objective CON 2 Surface Water Protection* and its associated policies.

Policy DRG 3.1 Non-Structural Floodplain Management

The County shall continue to rely on a nonstructural approach to floodplain management in order to maximize flood-holding capacity and minimize public expenditure for capital and maintenance costs.

Policy DRG 3.2 Surface Water Quality Plan

The County shall continue implementation of its surface water quality management plan to monitor and protect the quality and functioning of surface water resources. This program shall continue coordination with the St. Johns River Water Management District, Florida Department of Environmental Protection and US Environmental Protection Agency stormwater programs to increase consistency with programs such as the National Pollutant Discharge Elimination System (NPDES) and Total Maximum Daily Load (TMDL).

The County shall work cooperatively with the Florida Department of Environmental (FDEP) to develop a proactive approach to the TMDL process through the County's monitoring program, NPDES, Lake Management Program, and County's Watershed Atlas Project. These projects, and coordination between County and FDEP staff, with assistance from the County's consultant, has and will continue to enable the County to participate and have greater affect upon the development of TMDLs for all impaired water bodies, including those located within municipalities.

Policy DRG 3.3 Agency Coordination

The County shall continue to work with the St. Johns River Water Management District, the Federal Emergency Management Agency and other agencies to update mapping of floodways, identify point sources of pollution, conduct basin specific studies and develop regulations for the protection of drainageways.

Policy DRG 3.4 Stormwater Runoff Treatment

The County shall continue to rely on the Land Development Code and encourage nonstructural techniques such as Low Impact Development to ensure stormwater runoff be treated to reduce the pollutant loads discharged into receiving waters. Waters that have been identified as "impaired" and assigned Total Maximum Daily Load pollutant levels, may require additional or more stringent treatment.

Policy DRG 3.5 Development Regulations

The County shall prohibit development practices, which create over-drainage of land and soil.

Policy DRG 3.6 Low Impact Development Practices

The County shall amend the Land Development Code by 2010 to incorporate Low Impact Development (LID)practices to stormwater management that conserve and protect natural resource systems, reduce infrastructure costs, and mitigate potential environmental impacts.

In general, the LID approach includes practices that:

A Encourage preservation of natural resources;

B Allow development in a manner that helps mitigate potential environmental impacts;

C Reduce cost of stormwater management systems;

D Use a host of management practices to reduce runoff; and

E Reduce pollutants into the environment.

Policy DRG 3.7 Groundwater Recharge/Facility Design

The County shall require on-site detention and/or retention facilities placement in upland areas to maximize groundwater recharge.

Policy DRG 3.8 Education Program/Brochure

The County shall continue its commitment to its public education programs, supporting all appropriate videos, brochures, and other means of providing education in the following instructional areas: the causes and potential for flooding; the importance of natural conditions and vegetation to water quality maintenance; the importance of keeping drainage ways unobstructed; available County information such as Flood Insurance Rate Maps; County and State Code requirements; and ways to maintain water quality of lakes, conveyances and retention ponds. Brochures for public dissemination shall continue to be developed. The online Seminole County Watershed Atlas is an example of a public education program product.

Policy DRG 3.9 Groundwater Recharge

The County shall continue to evaluate its protection of recharge areas with each Evaluation and Appraisal Reporting cycle and amend regulations as necessary to ensure that natural recharge of groundwater from rainfall is not decreased.

OBJECTIVE DRG 4 FUNDING

The County shall implement innovative and feasible regulations and financing mechanisms to eliminate existing deficiencies, maintain existing systems and plan for future needs.

Policy DRG 4.1 Funding for Drainage Improvements

The County shall continue to seek implementation of a dedicated funding mechanism, such as a Municipal Services Taxing Unit, for financing existing and future Stormwater Program needs.

Policy DRG 4.2 Regional Stormwater Facilities

The County shall study and assess the feasibility and practicality of implementing area-wide or regional stormwater treatment facilities.

Policy DRG 4.3 Middle St. Johns Basin Stormwater Working Group

The County shall continue to coordinate, through the Middle St. Johns Basin Stormwater Working Group, the joint review, implementation and funding of basin master plans and associated improvements.

Policy DRG 4.4 Infrastructure Coordination

The County shall continue to coordinate the implementation of stormwater projects with roadway, utility or other facility improvements to maximize the efficient use of funds and to coordinate the proper sizing of new and replacement structures.

Policy DRG 4.5 Wekiva Study Area Capital Improvements

The County shall implement the provisions of the Wekiva Parkway and Protection Act, Sections 369.319, and 369.321(2), Florida Statutes, by application of the following strategies:

A Beginning in Fiscal Year 2006-2007, the County shall prioritize, in conjunction with overall County stormwater management efforts, the projects, programs, and activities applicable to Seminole County identified in the "Wekiva Parkway and Protection Act, Master Stormwater Management Plan Support, Final Report", November 2005 (the "CDM Plan" [formerly *Camp Dressor & McGee*]).

B The County shall base funding of any project, program, or activity from the CDM Plan on the following criteria:

1 Financial feasibility
2 Flood severity
3 Recharge potential
4 Ease of maintenance
5 Public benefit
6 Permit ability
7 Construction cost
8 Water quality retrofit need
9 Potential pollutant load reduction

C Projects, programs, or activities identified in the CDM Plan that meet the above criteria and are incorporated into the Capital Improvements Element, shall be identified as five year capital improvements.

D The County shall investigate, with each Evaluation and Appraisal Report cycle, Best Management Practices and available technology for stormwater reuse, and shall evaluate the possibility of establishing a stormwater reuse program for the Wekiva Study Area. The County shall incorporate any adopted stormwater reuse program into the Land Development Code.

E The County shall continue to fund stormwater projects, programs, and activities, including operations and maintenance. Funding sources may include the Transportation/General Fund/Municipal Service Taxing Unit or other identified sources.

OBJECTIVE DRG 5 LEVELS OF SERVICE

Established levels of service standards are performance standards which relate to the capacity, water quality treatment and flood control of stormwater facilities in order to meet minimum applicable State and Federal standards for water quality and flood protection.

Policy DRG 5.1 Development Level of Service Standards

The County shall require that all new development and redevelopment meet the design criteria set forth in *Exhibit DRG: Level of Service Standards For Development* and implemented through the County's Land Development Code.

Policy DRG 5.2 Land Development Code Stormwater Criteria

The County shall require all development applications to meet the following stormwater quality and quantity criteria implemented within the Land Development Code:

A All site alteration activities shall provide for such water retention, settling structures and flow alteration devices as may be necessary to ensure that post-development runoff will not be greater than the pre-development runoff.

B Permitted rates and volumes of stormwater runoff, whether discharged into natural or artificial water courses, shall meet existing water quality standards or ensure that the receiving water body is not degraded below the minimum conditions necessary to assure the suitability of water for the designated use of its classification as established in Chapter 62-302, Florida Administrative Code, whichever is greater.

C No site alteration shall cause siltation of wetlands, pollution of downstream wetlands, reduce the natural retention or filtering capabilities of wetlands or cause a health hazard.

Policy DRG 5.3 Agency Standards

The County shall regulate through the land development process development and redevelopment consistent with and meeting the minimum requirements of the St. Johns River Water Management District Rule 40C-42, Florida Administrative Code (FAC), Regulation of Stormwater Discharge and Rule 40C-4, FAC, Management and Storage of Surface Waters, and the Stormwater Discharge Rule Chapter 17-25, Ch. 17-3, FAC, implemented by the Florida Department of Environmental Protection which to protect and prevent further degradation of surface and ground waters.

Policy DRG 5.4 Water Quality Monitoring and Deficiency Correction Program

The Comprehensive Plan shall be amended to incorporate the long-range deficiency correction and monitoring programs, such as those required by the Environmental Protection Agency and Florida Department of Environmental Protection into the Capital Improvements Element.

Policy DRG 5.5 Expansion of Total Maximum Daily Load Program

The County shall consider establishing a Total Maximum Daily Load (TMDL) Program for all surface water bodies once such programs have been established for impaired bodies of water.

OBJECTIVE DRG 6 INTERGOVERNMENTAL COORDINATION

The County shall work with all parties to maximize funding, education, deficiency correction of existing stormwater management facilities, construction of new stormwater management facilities and surface water protection in Seminole County.

Policy DRG 6.1 Intergovernmental Coordination

The County shall continue to work collaboratively with the Stormwater Working Group, the Florida Department of Environmental Protection, the US Environmental Protection Agency, the Federal Emergency Management Agency, and other agencies to maximize its goals relating to funding drainage improvements, water quality improvements, and environmental protection projects.

Policy DRG 6.2 Seminole County Watershed Atlas

The County shall continue to coordinate with the Municipalities, other Local Governments, State, and Federal agencies to allow the Seminole County Watershed Atlas to reflect the most current and up-to-date information on new changes in regulations, water quality, hydrology, other environmental parameters, or other types of data as decided by the Seminole County Roads-Stormwater Division.

Policy DRG 6.3 Wekiva Study Area Stormwater Management

The County shall address the master stormwater management plan provision of the Wekiva Parkway and Protection Act, Section 369.319, Florida Statutes, to assist in alleviating problems related to surface water conveyance and quality, and in improving the quality and quantity of groundwater discharging into the springs within the Wekiva Study Area, by application of, but not limited to, the following strategies:

A Implementation of the projects, programs, and activities recommendations, applicable to Seminole County, contained in the "Wekiva Parkway and Protection Act, Master Stormwater Management Plan Support, Final Report", November 2005 (the "CDM [Camp Dressor & McGee] Plan"); and

B Implementation of Best Management Practices (BMPs), including, but not limited to, applicable BMPs recommended in "Protecting Florida's Springs – Land Use Planning Strategies and Best Management Practices", Florida Department of Community Affairs and Florida Department of Environmental Protection, 2002, and from the Model Goals, Objectives, and Policies, Wekiva Study Area, published by the Department of Community Affairs (April 2006).

C As additional protection to groundwater and surface water, development activity (including the placing or depositing of fill within wetlands and the 100 year floodplain identified by Federal Emergency Management Agency), within the Wekiva River Protection Area shall be prohibited except in cases of overriding public interest. Where wetland values are degraded due to overriding public interest, mitigation efforts shall occur. Floodplain impacts will require compensating storage.